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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/671,164

09/25/2003

Suzanne Mary Vining

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EXAMINER

NGUYEN, KHAI M


ART UNIT

PAPER NUMBER

2819

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|---|
| Office Action Summary | Application No. 10/671,164 | Applicant(s) VINING, SUZANNE MARY | |
| | Examiner Khai M. Nguyen | Art Unit 2819 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12, 13, 17, 18, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 9-11, 14-16, and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The application has not been checked to the extent necessary to determine the presence of all possible typographical and grammatical errors. However, Applicant's cooperation is requested in correcting any errors of which he/she may become aware in the application.

Allowable Subject Matter

2. Prosecution on the merits of this application is reopened on claims 1-8, 12-13, 17-18, and 20-21 considered unpatentable for the reasons indicated below:

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 12, 17-18, and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Maddux (US 6,529,148) (hereinafter referred to as "Maddux").

Regarding claim 1, Maddux discloses (Fig. 1, element 150) a data recovery device (col. 1, lines 7-9) comprising:

a number of sample components (block 230 of Fig. 2) that obtain (or generate) samples ($d_1 \dots d_N$) of a received serial data stream (115) at a number of phases (231), wherein the number of phases are successively offset (column 3, lines 37-41) throughout a bit time period and the samples are obtained throughout the time period at the number of phases (N different phases);

a number of transition detectors (Maddux uses the term “edge detector”, block 250 of Fig. 2) corresponding to the number of obtained samples that analyze consecutive data samples in order to identify transitions (column 3, lines 45; and

a first circuit (including logic blocks 240 and/or 280 as compared to the OR gate 508 of the inventive Fig. 5A) that generates a serial decoded data stream (recovered data) that comprises values for time period(s) according to occurrence or non occurrence of one or more transitions within the respective time period(s).

Regarding claim 2, Maddux discloses the device of claim 1, wherein the number of sample components can be arranged in a single or a dual column configuration (Fig. 2, and column 3, lines 25-45) [to mitigate metastability].

Regarding claim 3, Maddux discloses the device of claim 1, wherein the sample components are comprised of D-type flip flop elements (Maddux uses the term registers 500, Fig. 5) respectively clocked at one of the number of phases (N different phases) (column 3, lines 37-42).

Regarding claim 4, Maddux discloses the device of claim 1, wherein the number of obtained samples ($d_1 \dots d_N$) is a number that is greater than 1 (since 12 is a predetermined number that is > 1) (column 3, lines 37-41).

Regarding claim 5, Maddux discloses the device of claim 1, wherein the transition detectors (250) comprise an XOR logic (column 3, lines 49-53) that generates a low value (when the output of an XOR gate is zero) on a non-occurrence of a transition between two associated successive samples (adjacent data samples) and generates a high value (when the output of an XOR gate is one) on an occurrence of a transition between two associated successive samples (adjacent samples) and a register means (270) that maintains or receives the generated value (col. 4, lines 4-10).

Regarding claim 6, Maddux discloses the device of claim 1, wherein the transition detectors (250) generate data toggles (between high/low or one/zero values – this is a typical output of an XOR gate) that indicate occurrence or non-occurrence of a transition for respective time periods.

Regarding claims 7-8, Maddux discloses the device of claim 6, wherein the first circuit (N-to-1 multiplexer 280 – Fig. 2) performs a logical OR operation (this operation is equivalent to the operation of the N-to-1 multiplexer 280) on the data toggles (d1...dn) to generate the decoded data value.

Regarding claim 12, Maddux discloses a clock and data recovery system comprising (Fig. 1):

- a receiver device (100) that receives a serial data stream (115) having an associated frequency;

- a phase generator (231) that produces N phases of a clock signal (N phase clocks – Fig. 2) that have an associated frequency of about the frequency of the

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received serial data stream, wherein the N phases are successively offset by a predetermined $[(1/N)]$ of a time period (column 3, lines 37-42); and

a data recovery component (150) that identifies transitions (this is done by the edge detector 250) in the received serial data stream (115) and obtains a recovered serial data stream (recovered data – output of the mux 280) based solely on the identified transitions (column 3, lines 49-53).

Regarding claims 17 & 20, Maddux discloses a method of recovering data (Fig. 1- block 150) over a single time period (column 3, lines 9-68) comprising:

obtaining a number of data samples (samples $d_1 \dots d_n$ - this is done by block 230) of a received serial data stream (115) according to a number of phase clocks (N clock phases 231);

analyzing consecutive data samples (adjacent samples) to identify (by detector 250) transitions;

generating a first value (high value) on identifying one or more transitions (one output of the XOR gates); and

generating a second value (low value) that is a complement of the first value on not identifying one or more transitions.

Regarding claim 18, Maddux discloses the method of claim 17, further comprising generating a number of phase clocks (N phases) successively offset throughout the time period (column 3, lines 37-41).

Regarding claim 21, Maddux discloses the method of claim 17, wherein analyzing (by detector 250) consecutive samples (i.e., adjacent samples) comprises performing an exclusive-or operation on the consecutive samples (col. 3, lines 49-53).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maddux (US 6,529,148) in view of Burn et al. (US 5,671,258). Maddux discloses the claimed invention of claim 12 except for the inclusion of the clock recovery component. Burn et al. discloses a receiver including a clock recovery component. Therefore, it would have been obvious to one person having ordinary skills in the art at the time the invention was made to include a clock recovery circuit/component as taught by Burn et al. in the receiver device of Maddux for the purpose of recovering the clock signal (abstract, and column 1, lines 5-15).

5. Claims 9-11, 14-16, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The examiner can normally be reached on 9:00 - 5:30 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford (Rex) Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Khai M. Nguyen
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571-272-1809

SPE Rexford Barnie
SPE 2819